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# STUDIES ON CERTAIN SPECIES OF TERRESTRIAL ISOPODA ( CRUSTACEA ) FROM BASRAH REGION , IRAQ

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During the years 1966 -- 1971 , studies have been made on six species of terrestrial Isopoda of Southern Iraq ( Basrah Region ). The climatic conditions such as temperature and humidity were high,while the salinity of the soil was highest when these specimens were collected from garden grass , cactus , stems of palm -- trees , old cellars and from beneath the decayed wood . One of these specimens was collected from the coast of Shatt -- Al -- Arab .

The specimens were fixed in formalin ( 5% ) and later in 75% alcohol , and kept in the Department of Biology , University of Basrah .

The identification was carried out in Department of Crustacea , Museum of Natural History , Berlin .

The specimens belong to the following families : -- Oniscidae : Philoscia sp. cf. Ph. moneaguensis ; Porcellionidae : Metoponorthus pruinosus . Porcellio sp . cf . Porcellio ( Porcellio ) evansi , Lepto-- trichs politus ; Armadillidiidae : Pareluma minuta ; Armadillidae : Periscyphis tamei . Philoscia sp . cf . Ph . moneaguensis VAN NAME forms a new record for it has not been reported earlier from Iraq .

Facilities offered by Professor K . Senglaub , Director of the Museum , to carry out present investigation , are gratefully acknowledged .

Fam . Oniscidae

Philoskia sp : cf : Ph : moneaguensis VAN NAME , 1936 , P . 152 .

Material : 1 female ( L = 4 . 5mm ; W = 1 . 5mm ) , collected on 10 . 6 . 1970 .

Description : Body oblong , narrow with fine tubercles .

Cephalon : rounded behind ; linea frontalis not prominent , arched posteriorly , reaching to the middle of the eyes and bent sidely along the inner border of the eyes . Lateral lobes are marked in front of the eyes and extend downwards , slightly laterally .

Epistome sinuated at its both sides and truncated medially .

Clypeus prominent , tumid and arched . Eyes of 10 ocelli . situated postero -- laterally from the lateral lobes ( Fig . 1A ) . Antenna long , setose in all joints , the 5th joint of peduncle is the longest and as long as the flagellum . Flagellum of 3 joints , distal one is the longest ( Fig . 1B ) . Mandible without pars molaris , the left one of one brown pars incisiva , the outer of 3 unbranched setae . The right mandible of one pars incisiva of 3 brown teeth , one glossy lobe of lacinia mobilis , 2 setae and slender penicilla of unbranched setae . Maxillula . inner branch with 2 slender plumose setae . Maxilliped : with narrow palp of pointed apex , inner plate spined .

Peraeomers : the 2nd and 3rd are the longest with rounded postero -- lateral edge , directed anteriorly . The posterior edge of 4th one straight with right postero — lateral angle . The antero -- lateral edges of 5th , 6th , 7th ones are rounded . but posteriorly directed and their pleurae produced posteriorly with acute postero — lateral angles , those of 7th cover the lateral parts of lst pleomer and extend to half of 3rd pleomer . Peraeopods are densely spinose .

Pleon : is abruptly narrower than peraeon ( Fig . 1C ) .

Pleomers : with very small pleurae , the 2nd pleomer is the shor-- test with short lateral parts , those of 5th one extending fo half of the pleotelson .

Pleopods : the lst and 2nd ones are without endopodites , the exopodiites with vestigial pseudotacheae .

Pleotelson : is wider than long , with rounded apex and slightly sinuated sides , extending to the half uropodal protopodite .

The outer side of protopodite grooved ( channeled ) , with parallel keels , not converging basally . Uropodal exopodite long , the endopodite shorter than the exopodite , extending parallel from the middle of telson and not inserted at the same level of exopodite.

Colour : Cephalon brown , spotted with yellow patches , the pleon brown also . Peraeon brown with symmetric yellow wavp lines on either sides of median line .

Locality : In moist places , among the stones which are along the coast of Shatt -- Al -- Arab .

Discussion : this specimen resembles Ph . moneaguensis only in the following points : 1 — Length and width 2 — Antennae 3 — Pleon and its epimers , pleotelson and uropods .

Fam . Porcellionidae .

Metoponorthus pruinosus ( BRANDT , 1833 ) .

Porcellio pruinosus BRANDT 1833 p . 181 ; P . truncatus H . MILNE -- EDWARDS 1840 p. 173 ; Metoponorthus pruinosus BUDDE -- LUND 1885 p . 169 ;

Metoponorthus or Porcellionidae pruinosus SARS 1898 p.184 ; VERHOEFF 1918 p . 132 , 138 ; 1951 p . 243 ; OMER — COOPER 1923 P . 105 ;

STROUHAL 1936 p . 77 ; 1948 p . 132 ; 1951 p . 123 , 1954 p . 591 ;

GRUNER 1966 p . 251 .

Material : 10 males L = ( 7 -- 11 ) mm ; 62 females L = ( 10 -- 13 ) mm , collected in May 1971 .

Deslription : Male of 11 mm long , 4.5 mm wide and female of 13 mm long , 5 mm wide .

Both sexes differ in the following points :

First peraeopod :

Male : propodus of 2 rows . each of 3 bristles,carpus of bristled -- brush , distally terminated with a long one , merus also of bristled — brush , but fewer and shorter than of carpus ;ischium with few bristles , but nothing on the base .

Female : propodus of 2 rows , each of 4 bristles , carpus with few larger and sharper bristles .

First and second pleopods :

Male : the exopodites with tracheal system , the first endo—

podite modified to gonopods , Ductus ejaculatorii are crinochaeta ( separated ) , the second endopodite with an apical transparent tubular process , which is an extension from chitin and as half as long the distal part.

Female : the exopodite supplied with tracheal system , but without endopodites . ( Unwin , 1932 ) .

Embryonic development : in female , the oostegites found on 1 -- 5 peraeomers constructing marsupium . From one marsupium collected 80 -- 84 ova . All females are amphogenic . but the gener-- ations are thelygenic more than arrhenogenic .

Colouration : Body pigmented dorsally , male darker than female, slightly granulated , dorsal surface either brown with light wavy lines , symmetric on both sides of median line of peraeomer , or brown with lengthwise row of symmetric light yellow spots on its either sides .

Locality : M . pruinosus found where peoples are living , and easily collected from foundation of old houses , under stones or rotten woods , among dried leaves of decidous tree , and on stems of palm — trees . It is found also in cactus pots of Chamaeocereus silvestrii . In calm nights , easy to be collected more than in windy ( Gruner , 1966 ) , and where high temperature and more humidity.

Porcellio sp . cf : Porcellio (Porcellio) evansi OMER -- COOPER. 1923 .

Material : 1 male , L = 12 mm ; 3 females , L = 11 – 12 mm , collected in April 1969 .

Description : Male , L = 12 mm , W = 4 .5 mm .

Body oblong , robust , slightly convex . Linea frontalis (deeply notched in the middle , appearing two distinct prominences ), lateral lobes , well developed , but not exceeding the middle tubercles of linea frontalis . Eyes of 20 ocelli , situated postero--laterally from the cephalon and transverse to base of lateral lobes ( Fig . 2A ) . Antenna long . each of the 2nd , 3rd joints of peduncle with 2 apical pointed processes , last joint is the longest ; flagellum of 2 joints , the proximal is one half as long as the distal one ( Fig . 2B ) . Mandibles are typical with pars molaris , left one distinguished from the right . Left mandible of one pars incisiva , outer 3 teeth , inner of 2 ones , lacinia mobilis tufted , tuft of setae and one branched penicilla . Right mandible of one pars incisiva of 3 teeth , glossy lacinia mobilis , tuft of setae and branched penicilla . Maxillula : outer branch of 3 + 3 spines with fine hairs on its outer edge , with a tuft hairs behind it ; inner branch of 2 plumose setae .

Peraeomers : the first peraeomer is the longest , its antero-- lateral angle pointed anteriorly till the postero -- lateral angle of lateral lobe of head . The 4th , 5th peraeomers are the shortest .

The postero -- lateral angles of all peraeomeral epimers directed posteriorly , those of 7th one extend to half of the 4th pleomer and

cover the lateral parts of 1st , 2nd pleomers . The 1st , 2nd , 3rd peraeomers with antero -- lateral processes ( 2 in each segment ) , which are concealed by posterior edge of the proceeding one .

Noduli laterales are as light patches on coxal plates of peraeo-- mers and the gland fields are situated antero -- laterally from them .

Lateral edges of all segments with transverse canalulii .

Peraeopods : of 1st , 2nd ones , the carpus with brush -- liked pad of spines . The 7th one is modified , of inflated ischium , its next three joints of serrated inner edges supplied with spines . ( In female only the first peraeopod supplied with this pad ) .

Pleopods : Exopodites of 1st , 2nd ones with trachea (air -- cavities ) in both sexes , of oval shape , parallel to the edges ( Fig . 2C,D,E,F ) their endopodites are modified to small gonopods; first gonopod extending till posterior edge of its endopodite and with an apical process slightly developed and curved outwards , second gonopod extending till half length of its endopodite and con-- cealed by it , and supplied with oblique wide groove , which separates its pointed distal part from triangular proximal one ( Fig . 2G,H ) . Ductus ejaculatorii are separated in genital papilla ( crinochaeta ) , ( in female , the Ist , 2nd pleopods with reduced trapezoid endopodites ) . The exopodites of 1st , 2nd pleopods are yellow in colour , those of 3rd , 4th , 5th with scattered brown pigments ( in both sexes ) . The 6th pleomer with wide and pointed telson ( pleotelson ) reaches to half of the uropodal exopodite . On either side of its posterior edge , there is one tubercle , opposite to middle of uropodal protopodite , dividing each side into concave and convex edges . Uropodal protopodite shorter than telson , its ventral surface larger then the dorsal , with pointed notch on its caudal edge .

Exopodite long and large , endopodite concealed partially by telson , and reaches slightly beyond the telsonic apex .

Granulation ; The granules are distributed on dorsal surface of the head : on its posterior edge , laterally define the eyes and 2 tubercles on the pointed angles from mid -- lobe of linea fron-- talis . Other granulations distributed in transverse lines on dorsal surface of all segments as the following :

1st peraemer 4 lines of granules , other peraeomers 3 lines of granules ; 1st , 2nd pleomers of 1 line of granules ; 3rd , 4th , 5th pleomers of 2 lines of granules .

The posterior edges of all these segments are granulated .

The granules of telson are arranged as following : (Fig . 2 I ) 4 granules in two rows on lateral sides of the pointed part of telson . 2 granules on posterior edges of 6th pleomer , each divi-- des the edge into concave and convex ones ; 4 granules in front of the latters , and 6 granules on posterior edge of the 5th pleomer.

Colour : Cephalon and last three pleomers are dark in colour , the peraeomers and 1st , 2nd pleomers are of yellow background . Two parallel brown lines on median line of peraeon and 1st , 2nd pleomers , and two laterals on epimers of peraeomers . Lateral parts of epimers are light yellow in colour .

Discussion : this specimen differs from P . ( P . ) evansi in the followings : 1 ) the length of the body , 2) the number of ocelli of eye , 3) the lateral edges of the telson , and 4) the number and distribution of granules on the pleotelson .

Locality : the specimen were collected among palm -- tree gardens in Jumhuriyah , northern Basrah City .

Leptotrichus politus OMER -- COOPER , 1923 .

Material , 3 males , L = (8 -- 9) mm ; 8 females , L = (6 -- 8) mm ; collected April 1969 .

Description : Male , L = 9 . 5 mm ; W = 4 . 5 mm .

Body oval , very covex , dorsal surface with numerous small irregular tubercles and fine short setae .

Cephalon : with triangular prominent median lobe and prominent semi -- nounded lateral lobes , extending over the proximal half of first joint of antennal peduncle . Eyes of eight ocelli , situated parallel with the base of lateral lobes . Antenna : short extend to half of first peraeomer , 3rd joint of peduncle as long as the 4th one , the 5th is twice as long as the former . Flagellum biarticulate , the proximal one is half length of the distal .

Mandibles : without pars molaris , the left one of pars inci-- siva , outer of 4 brown teeth , inner of 2 ones , tuft of setae , one separated seta and one penicilla . Right mandible of one pars incisiva of 3 brown teeth , lacinia molaris glossy and bilobed , 4 setae and one branched penicilla . Maxillula : outer of 5 spines , inner of 2 plumose setae .

Peraeomers : 1st , 2nd ones are slightly longer than others , the postero -- lateral edges of 1st , 2nd , 3rd ones are straight , of 4th slightly posteriorly directed , and of 5th , 6th , 7th poster-- iorly directed also . Epimers of 6th slightly developed , and of 7th well -- developed , covering the lateral parts of 1st , 2nd pleomers and extending to half of 3rd pleomer . Noduli laterales

absent , but the gland fields were distinct on the coxal plates of peraeomers .

Peraeopods : of 1st , 2nd , 3rd , 4th in male , the carpus supplied with brush -- liked pad on inner side , the carpus of 1st peraeopods in male slightly rounded interiorly , additional to consp-- icuous spines in both sexes on distal end of all joints of peraeopods ( Fig . 3 A , B ) .

Pleon : short , not abruptly narrower than peraeon , but the well developed epimers of 3rd , 4th , 5th pleomers (forming conti-- nuous and unbroken line ) with the lateral edges of the peraeomers. The 6th pleomer terminated with wide triangular but not pointed telsonic apex , which extends till half of uropodal protopodite ( Fig . 3C ) .

Pleopods : the exopodite of 1st , 2nd pleopods with pseudotra-- cheae, the first exopodite with narrow triangular apex which is dire-- cted postero -- exteriorly (Fig.3D) . Exopodite of 2nd pleopod with trangular shape and directed posteriorly ( Fig . 3 E ) :

The endopodites of 1st , 2nd pleopods are modified to gonopods. The first endopodite is long , slender and slightly curved out with a pointed apical process which curved outwards . The 2nd endopodite sharp -- pointed . ( In female the 1st , 2nd pleopods are without endopodites (Fig. 3 F, G) ) . The posterior margins of exopodites of the last three pleopods in both sexes serrated and haired . Uropodal protopodite with lateral triangular groove , fitting with the epimers of 5th pleomer , exopodite long and robust , its distal half extending caudally from telsonic apex , endopodite extending to 2/3 of exopodite .

Colour : yellow with light -- brown , wide lines on posterior

edges of all segments , female slightly darker than male .

Locality : the specimen were collected from Jumhuriyah , northern Basrah City and found among Alfalfa (Medicago sativa .), which was planted in palm -- tree gardens .

Fam . Armadillidiidae .

Pareluma minuta OMER -- COOPER , 1923 .

Material : 1 female , L = 7 mm ; W = 2.5 mm ; collected in April 1968 .

Description : Body oblong oval , very convex , especially peraeon , capable to roll up into a ball . All parts of body covered with thickly erect and short setae .

Cephalon : transverse oblong with marginal linea frontalis ; behind linea post -- scutellaria ; lateral lobes small ;rostrally the triangular epistome . Clypeus slightly sinuated in the middle . Eyes of 7 ocelli , situated antero -- laterally and defined by linea post -- scutellaris ( Fig . 4A ) . Antennula inconspicuous , of 3 joints . Antenna short , supplied with densed hairs , the distal joint of peduncle is as long as the flagellum . Flagellum of 2 joints , the proximal one is half length of the distal . The antennal lobe curved , elevated and separated from antero lateral margin by a groove , where the antenna settles . Mandibles : without pars molaris , the left mandible of one pars incisiva of brown teeth , outer trifid , inner bifid , tuft of setae , 3 separated setae and brush -- liked penicilla . Right mandible : outer of one pars incisiva of 3 brown teeth , inner translucent lacinia mobilis of crenulated edge , tuft of setae and brush liked penicilla . Maxilla of outer branch terminated with 3 large curved brown spines and 4 fine spines . Inner branch ter-- minated with 2 stout plumose setae .

1 — peraeomer slightly longer than others , with thick lateral

edges , separated from the same segment by a cleft -- liked short groove , to receive the coxal plate of the second one . Coxopodite distinct from underside on entire length of the lateral edge . It is also distinct in 2nd , 3rd peraeomers . The 2nd , 3rd , 4th ones with triangular epimers , those of 5th , 6th , 7th are trapezoid ( Fig . 4B ) . Of 1st peraeopod , the carpus with brush -- liked pad .

Pleomers : the lateral parts of 1st , 2nd pleomers are reduced, and laterally covered by the epimers of 7th peraeomers , the 3rd , 4th , 5th with subquadrate epimers , those of 5th one extend till half of uropodal exopdite . The 6th one with broad , slightly convex sided , telson of slightly rounded apex which covers the uropods partially . Uropodal protopodite is smaller than its exopodite and concealed partially by the telson . Exopodite large , flattened , lamellar , quadrate , and it occupies the space between telson and pleura of 6th pleomer , and reaches slightly beyond the telsonic apex . Endopodite slender elongate , situated in a narrow space between exopodite and telson and exceeds slightly its exopodite ( Fig . 4C ) .

Pleopods : the 1st , 2nd ones with tracheal organs , their endopodites are reduced . 1st exopodite is bicurvated at its posterior edge , which supplied with fine hairs . 2nd exopodite trapezoid with more distinct hairs at its posterior edge ( Fig . 4D , E ) .

Marsupium : formed between 2 -- 6 peraeomers with 26 eggs ( calculated ) , those anteriorly are more developed than those posteriorly in the marsupium ( brood -- pouch ) .

Colour : cephalon and peraeomers with their epimers of light brown , posterior edges with symmetric yellow wavy stripes on either side of median line , pleomers of light brown colour .

Locality : it is collected with Periscyphis tamei from the cellars of old houses in Basrah City .

Fam . Armadillidae :

Periscyphis tamei OMER — COOPER , 1923

Material : 20 males , L = ( 7 -- 8 ) mm ; 30 females , L = ( 8 -- 9 ) mm , collected March 1969 .

Description : Male , L = 7 mm , W = 3 mm .

Body oval , very convex dorsally , being rolled up into a ball . Cephalon with small lateral lobes ( Fig . 5A ) . Epistome flattened without marginal line . triangular in the middle and sinuated at both sides . Clypeus sinuated ventrally . Neither antennal lobe , nor the groove for antenna to settle . Eyes of 12 ocelli .

Antenna : short , extend till the eyes , flagellum of 2 joints , the distal one is one and half as long as the proximal , and pubescent with fine hairs and scales . Mandibles : without pars molaris , left one of one pars incisiva of brown teeth , outer trifid , inner bifid ; tuft of setae ; one separated seta and brush -- liked penicilla . Right mandible of one pars incisiva of 3 brown teeth , lacinia mobilis of glossy lobe , one separated seta and brush -- liked penicilla . Maxillula : outer branch ( endite ) terminated into 2 stout curved spines + 3 (4) smaller ones , outer edge with fine hairs inner branch terminated with 2 slender plumose setae .

Peraeomers : the first one is the longest with thick lateral edges ( coxopodites ) which is rounded posteriorly and separated dorsally from the segment by a deep groove ( striated longitu-- dinally ) , which extends as narrow one parallel with anterior edge

of the segment . and postero -- laterally with entire corner , but cleft underside by a deep notch which receives the edge of the second segment , when the animal easily rolls up ( Fig.5B ) . The 2nd , 3rd peraeomers with thick antero -- lateral edges underside , and with short coxal processes . The 2nd , 3rd , 4th ones are alike in their triangular epimers with rounded apices . The 5th , 6th , 7th are similar in their trapezoid epimers , those of 7th cover the lateral parts of 1st , 2nd pleomers .

Peraeopods : in 1st , 2nd , 3rd ones . carpus with brush -- liked pad of spines , which is absent in female . The 7th peraeopod is much modified : its merus inflated ; the inner edges of merus , carpus and propodus serrated and supplied with strong spines ; of female not modified .

Pleomers : the epimers of 3rd one are larger than of others . The 6th one terminated with triangular telson of slightly wide , rounded apex and concave sides .

Pleopods : 1st exopodite slightly rounded with a depression defines tracheal organs anteriorly , nearly lateral from anterior margin ; posteriorly and anteriorly with hairs ( Fig . 5C ) . The first endopodite modified to gonopod , its basal part of 2 lobes , the middle part is triangular and the distal one curved out with pointed apex , which curved inwards ( Fig . 5 D ) . The second exopodite longer than triangular , with sinuated anterior edge and oblique posterior haired edge ( Fig . 5E ) . 2nd endopodite narrow and long with S-- shape at its basal part and modified to gonopod , and distally sharp -- pointed with a long hair ( Fig . 5F ) . ( In female , the 1st . 2nd pleopods are without endopodites ) . Ductus ejaculatorii are united ( synochaeta ) .

Exopodites of the last three pleopods furnished with hairs , at

their posterior edges . 3rd exopodite larger than the formers with sub -- quadrate proximal part and triangular distal one , containing a groove ( Fig . 5G ) . All exopodites with tracheal organs . Ductus ejaculatorii are united ( synochaeta ) .

In female : the 1st , 2nd pleopods without endopodites . The 1st exopodites smaller than others,leaf -- like shape , with a depre-- ssion on anterior edge and bilobed medial process ( Fig . 5H ) . The 2nd exopodite longer , triangular , the 3rd one sub -- quadrate with curved anterior edge and haired posterior one ( Fig.5I , J ) .

Uropods : slightly reach beyond the triangular telsonic apex , with shallow depression on its caudal edge . Uropodal protopodite large and occupies the space between the telson and the pleura of 5th pleomer . Exopodite very small , inserted in the middle dorsal surface , near to posterior margin and terminated with 2 long hairs . Endopodite long slender , concealed partially by the telson and reaches slightly beyond telsonic apex and supplied caudally with hairs and with fine ones on inner lateral margin ( Fig . 5K) .

Colour : Cephalon light brown with yellow patches , posterior edges of all segments are light brown and the median line also , with yellow symmetric wavy lines laterally . Pleon yellow in colour . Dorsal surface of all segments and uropods are covered with fine , short setae and faintly granulated . Small bodies of fatty tissue distibuted under the chitin in all joints of body .

Locality : P . tamei foud in old houses , at their foundations , in the cellar or under stones in moisty places.Easily to be collected at summer nights , especially from Basrah City .

Fig . 1 : Philoscia sp . cf . Ph . moneaguensis ( female )

A : dorsal view of cephalon ;

B : antenna

C : pleon + uropods

Fig . 2 : Porcellio sp . cf . P . ( P . ) evansi ( male )

A : cephalon + 1 . peraeomer

B : antenna

C : 1 . exopodite

D : 2 . exopodite

E : 1 . endopodite

F : 2 . endopodite

G : 1 . exopodite ( female )

H : 2 . exopodite ( female )

I : pleotelson + uropods

Fig . 3 : Leptotrichus politus ( male )

A : 1 . peraeopod

B : 7 . peraeopod

C : 5 . pleomer + pleotelson + uropods

D : 1 . pleopod

E : 2 . pleopod

F : 1 . exopodite ( female )

G : 2 . exopodite ( female )

Fig . 4 : Pareluma minuta ( female )

A : dorsal view of cephalon

B : lateral view

C : 5 . pleomer + pleotelson + uropods

D : 1 . exopodite

E : 2 . exopodite

Fig . 5 : Periscyphis tamei

A : dorsal view of cephalon

B : 1 . peraeomer ;

C : 1 . exopodite

D : 1 . endopodite

E : 2 . exopodite

F : 2 . endopodite

G : 3 . exopodite

H : 1 . exopodite

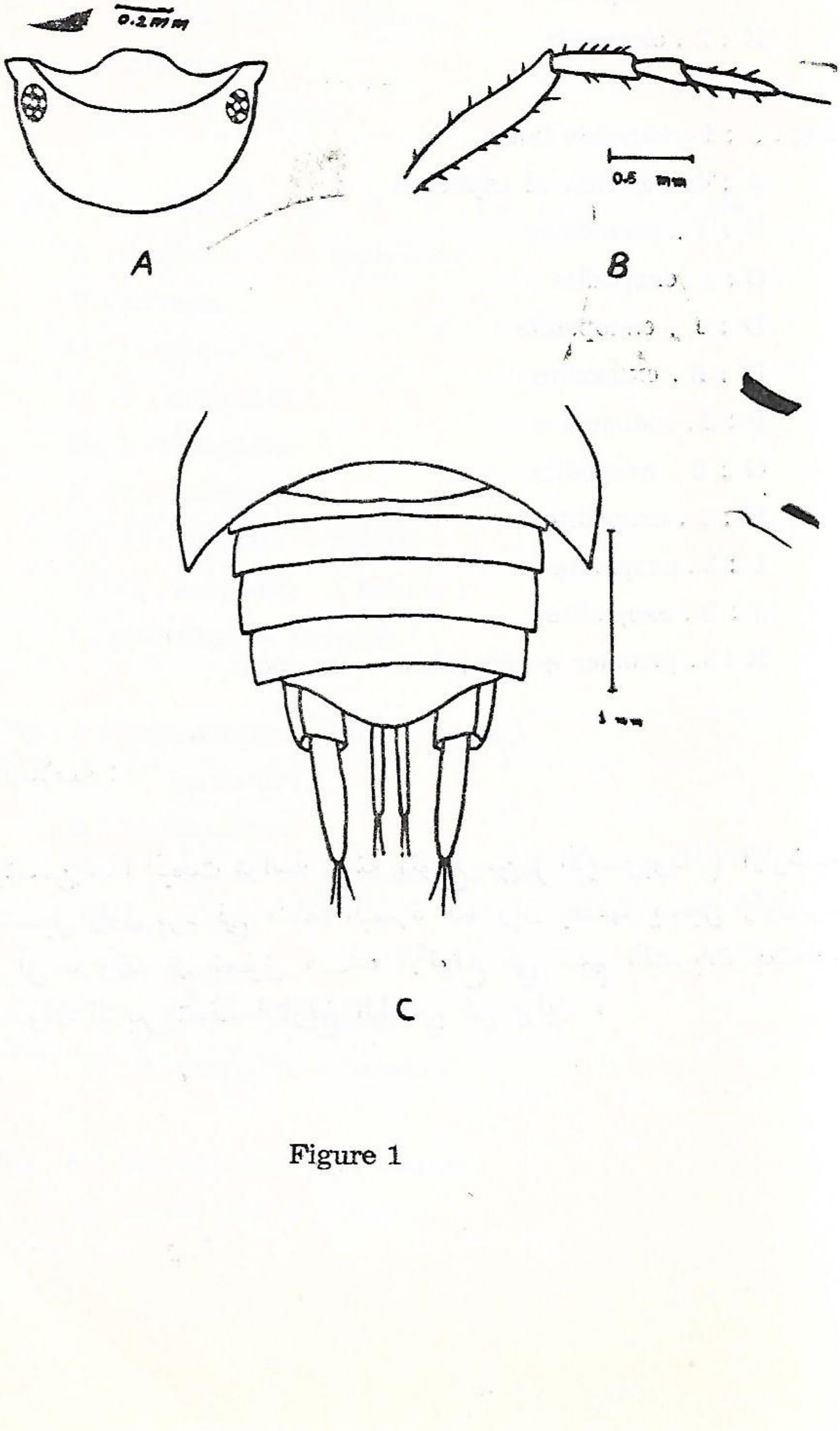
I : 2 . exopodite

J : 3 . exopodite

K : 5 . pleomer + pleotelson + uropods

الخلاصة :

يتضمن هذا البحث دراسة لستة أنواع من ( الايسوبودا ) الأرضية والتي تسجل لأول مرة في منطقة البصرة كما وإن بعضها يسجل لأول مرة في العراق • ولقد تم تحقيق هـذه الأنواع في قسم القشريات بمتحف علم الحيوان التابع لمتحف التاريخ الطبيعي في برلين •




A B C

Figure 1

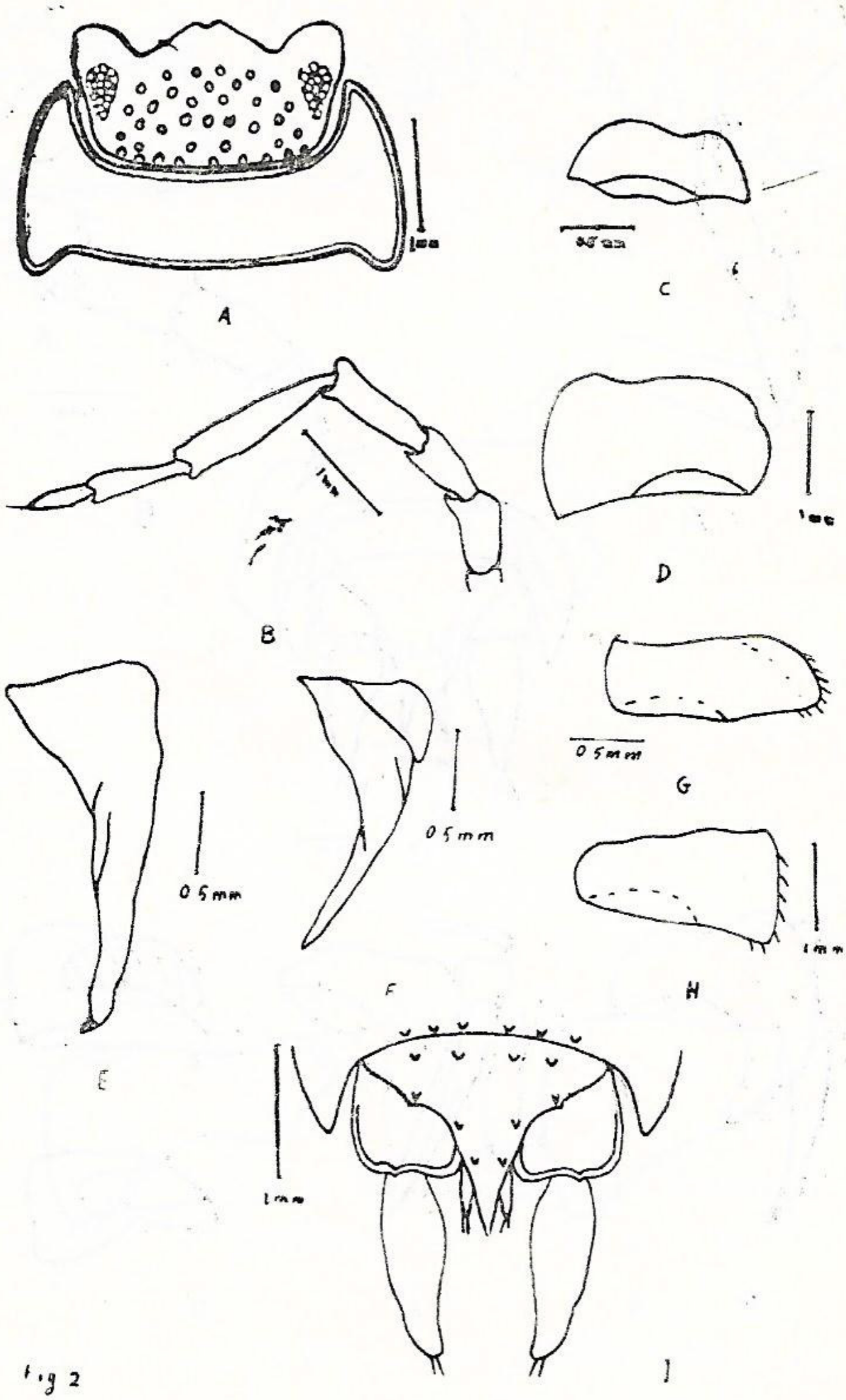



Figure 2

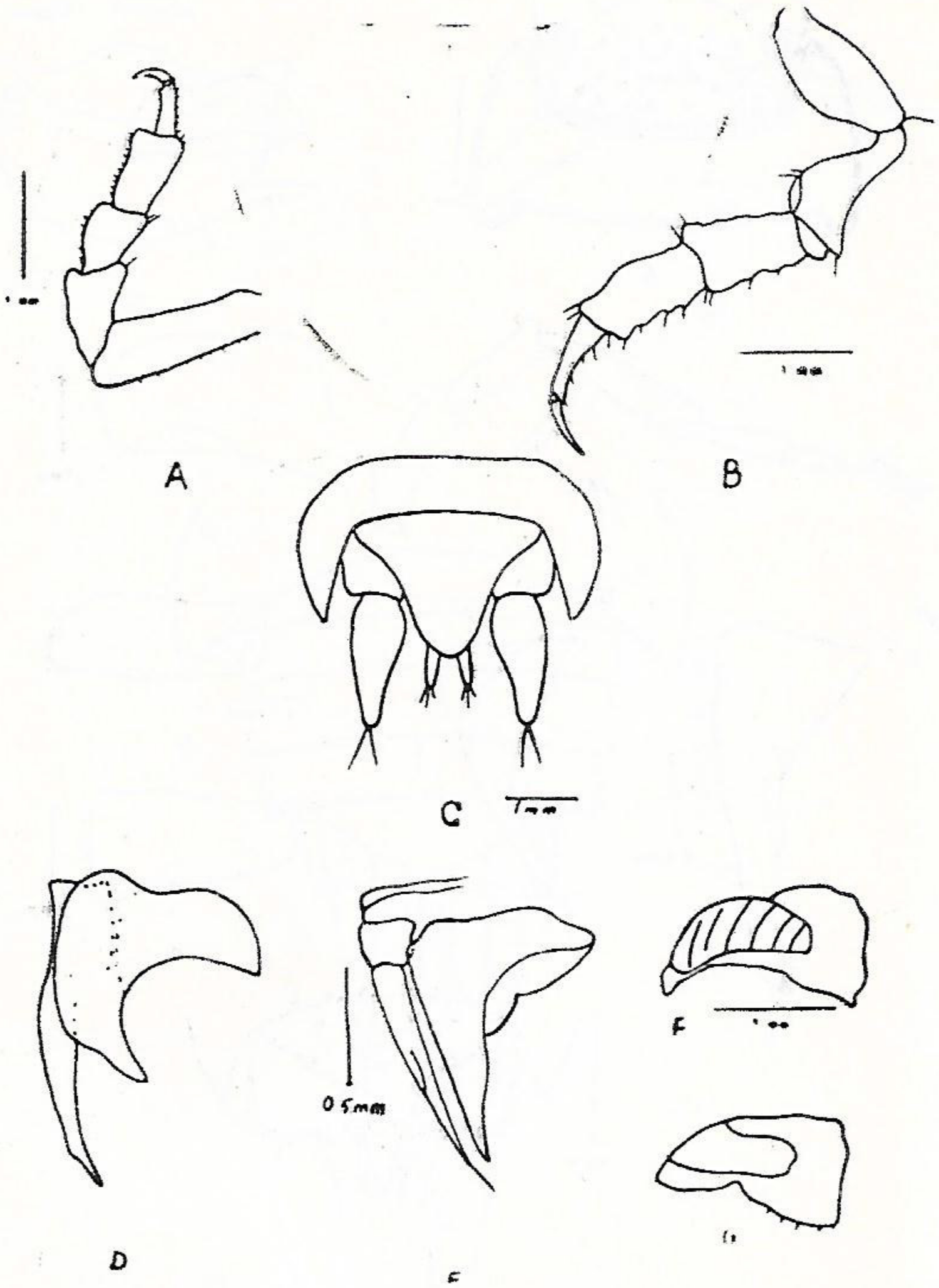



Figure 3

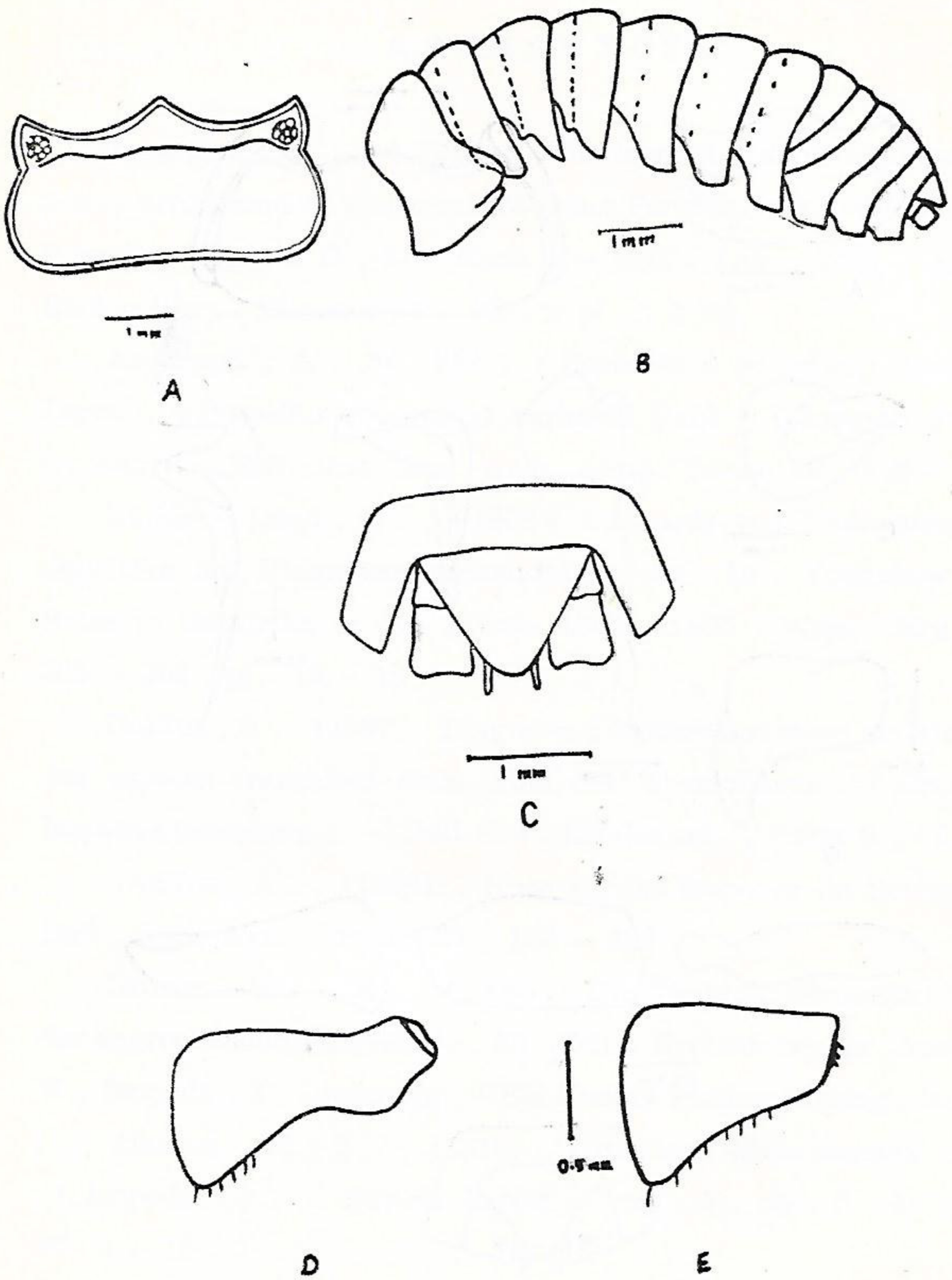
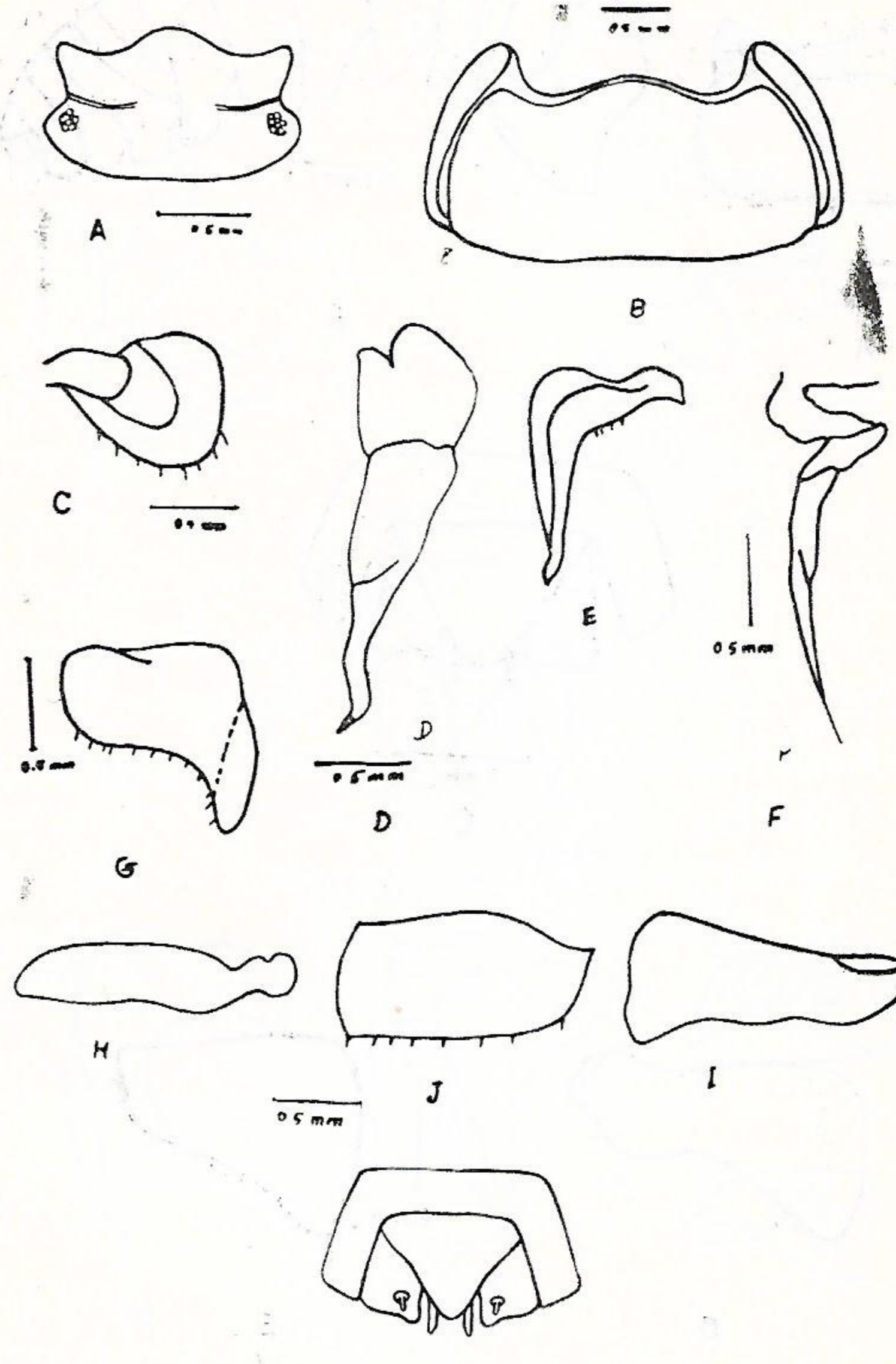



Fig 4

**Figure 4**




Figs

Figure 5

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